IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: **Masato IWANAGA et al.** Group Art Unit: **1745**

Application Number: **10/670,384** Examiner: **Gregg CANTELMO**

Filed: **September 26, 2003** Confirmation Number: **2733**

For: **NONAQUEOUS ELECTROLYTE SECONDARY CELL**

Attorney Docket Number: **031201**
Customer Number: **38834**

SUBMISSION OF DECLARATION UNDER 37 C.F.R §1.132

Mail Stop Amendment
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

December 28, 2007

Sir:

Further to the Amendment Under 37 C.F.R. §1.111 filed October 25, 2007, Applicants hereby submit herewith an executed Declaration Under 37 C.F.R. §1.132 in connection with the above-identified application.

The 132 Declaration contains the data submitted in the 111 Amendment in declaration form. Please also note the Declarant's statements that the results were unexpected. In re Soni, 34 USPQ2d 1684, 1688 (Fed. Cir. 1995).

If any fees are due with this paper, please charge Deposit Account No. 50-2866.

Respectfully submitted,
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LCW/af
Enclosure: Declaration Under 37 C.F.R §1.132

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P. O. Box 1450
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Sir:

I, Masato IWANAGA, hereby declare and state:

That I have graduated from Osaka City University, Engineering, receiving a master's Degree in Applied Chemistry;

That I have been employed by Sanyo Electric Co., Ltd. since 1998, where I have been engaged in research and development relating to lithium-ion batteries;

That I am an inventor of the above identified application;

That I am familiar with the prosecution history of the above-identified application and the references cited therein;

That the following experimentation was conducted under my supervision and control;

Unexpected Advantageous Effects

Data has been prepared to establish that a secondary cell of the present invention, comprising all the claim limitations, is unexpectedly superior over a secondary cell as in the cited art, which lacks at least one of the claim limitations. The data is attached herein as Table 1.

Cell A1 in Table 1 corresponds to the cell according to claim 2 of the present invention (a vinylene carbonate compound represented by Chemical Formula 1, a cyclic sulfite compound represented by Chemical Formula 2 or 3, and a phenylcycloalkane compound).

Cell A2 corresponds to the cell according to claim 11 of the present invention (a vinylene carbonate compound represented by Chemical Formula 1, a cyclic sulfite compound represented by Chemical Formula 2 or 3, and an alkylbenzene compound having a quaternary carbon directly bonded to a benzene ring).

Cell A3 corresponds to the cell according to claim 5 of the present invention (a vinylene carbonate compound represented by Chemical Formula 1, a cyclic sulfite compound represented by Chemical Formula 2 or 3, a phenylcycloalkane compound and an alkylbenzene compound having a quaternary carbon directly bonded to a benzene ring).

Cell X1 comprises vinylene carbonate and ethylene sulfite (and lacks a phenylalkane and/or an alkylbenzene compound having a quaternary carbon directly bonded to a benzene ring) and is representative of JP '611.

Cell X3 comprises phenylcyclohexane and tert amylbenzene (and lacks a vinylene carbonate compound represented by Chemical Formula 1 and a cyclic sulfite compound represented by Chemical Formula 2 or 3) and is representative of JP '398 and Takahashi.

Cell X4 comprises tert amylbenzene (and lacks a vinylene carbonate compound represented by Chemical Formula 1 and a cyclic sulfite compound represented by Chemical Formula 2 or 3) and is representative of JP '909.

Cell X2 is an example of a cell comprising vinylene carbonate and phenylhexane (and lacks a cyclic sulfite compound represented by Chemical Formula 2 or 3).

Cell X5 is an example of a cell comprising vinylene carbonate and tert amylbenzene (and lacks a cyclic sulfite compound represented by Chemical Formula 2 or 3).

Table 1

cell	additive composition (wt.%)				cycle characteristics capacity maintenance rate (%)	high temperature standing tests results		
	VC(e2)	ES(e3)	PCH(e4)	TAB(e5)		solution leakage	current cutting-off	evaluation
X1	2.0	0.5	0.0	0.0	61	found	found	bad
X2	2.0	0.0	2.0	0.0	55	found	found	bad
A1	2.0	0.5	2.0	0.0	85	not found	found	good
A2	2.0	0.5	0.0	3.0	81	not found	not found	excellent
A3	2.0	0.5	1.0	1.0	83	not found	not found	excellent
X3	0	0	2	0	32	found	found	bad
X4	0	0	0	2	39	found	found	bad
X5	2	0	0	3	58	found	found	bad

VC = vinylene carbonate
ES = ethylene sulfite
PCH = phenylcyclohexane
TAB = tert amylbenzene

Table 1 shows for the comparative examples:

The capacity maintenance rate of **Cell X1** is 61%;

The capacity maintenance rate of **Cell X3** is 32%;

The capacity maintenance rate of **Cell X4** is 39%;

The capacity maintenance rate of **Cell X2** is 55%; and

The capacity maintenance rate of **Cell X5** is 58%.

The capacity maintenance rates of inventive **Cells A1 to A3** are unexpectedly superior, as high as 81% to 85%.

The comparative **Cells X1 to X5** also showed solution leakage, while the inventive **Cells A1 to A3** showed no solution leakage.

I have reviewed the above experiments and data and conclude that the excellent capacity maintenance rates and the improvements in lack of solution leakage as achieved by the inventive samples as compared to the comparative samples would be unexpected to one skilled in the art in view of the prior art.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 21/Dec./2007

Masato Iwanaga
Masato IWANAGA